

Leaflet | © OpenStreetMap contributors

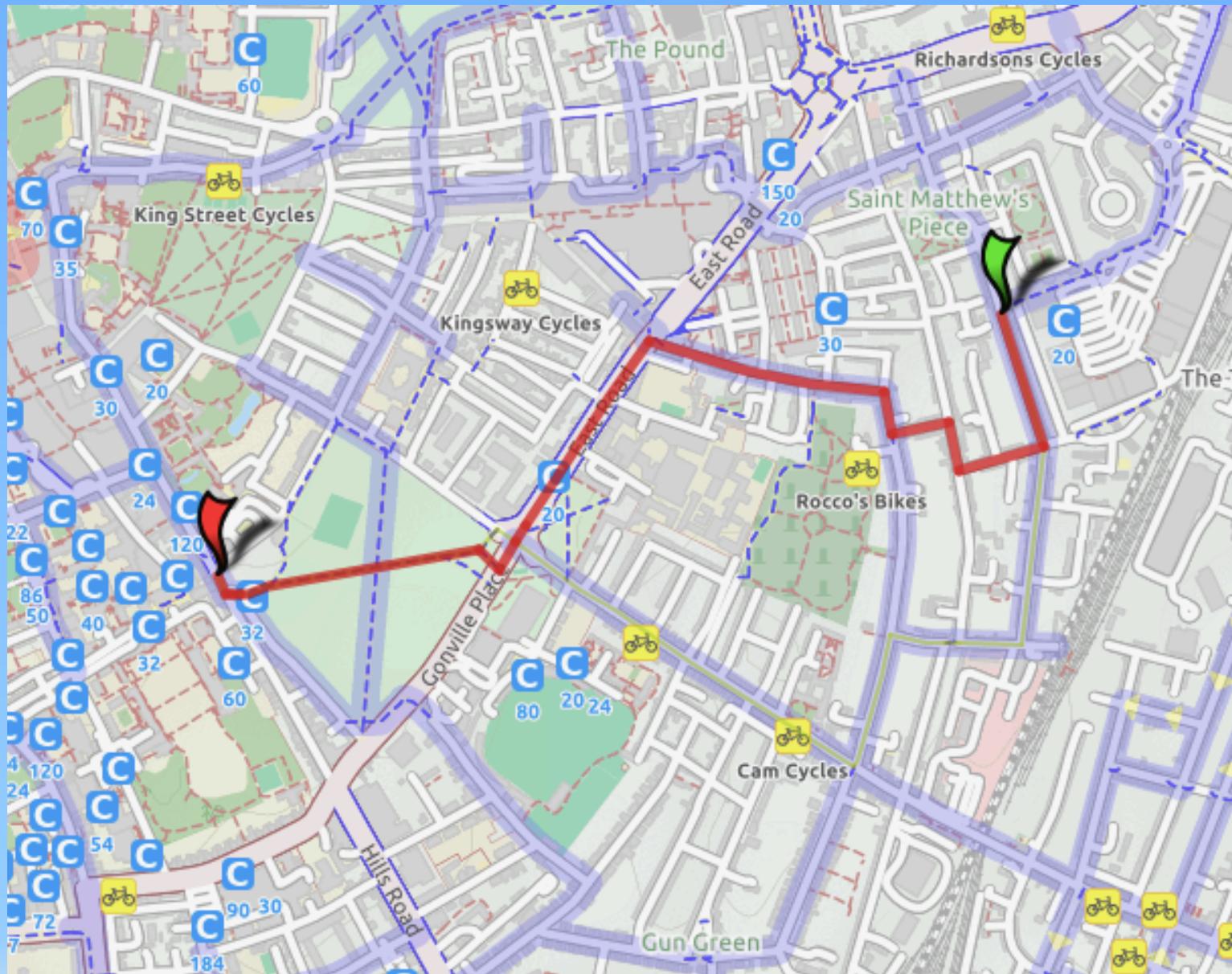
Web mapping with open data

Martin Lucas-Smith, CycleStreets

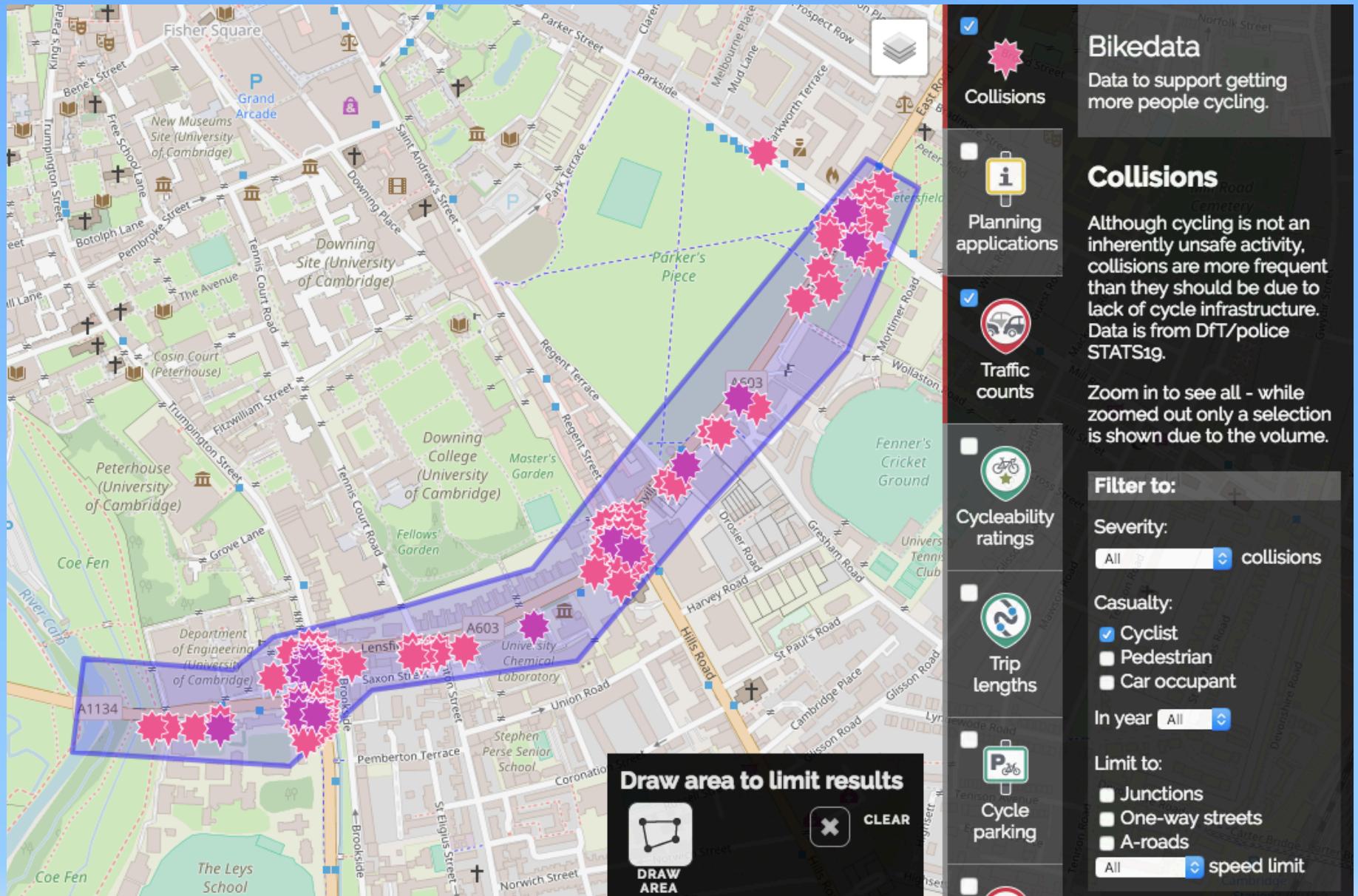


Mapping frameworks

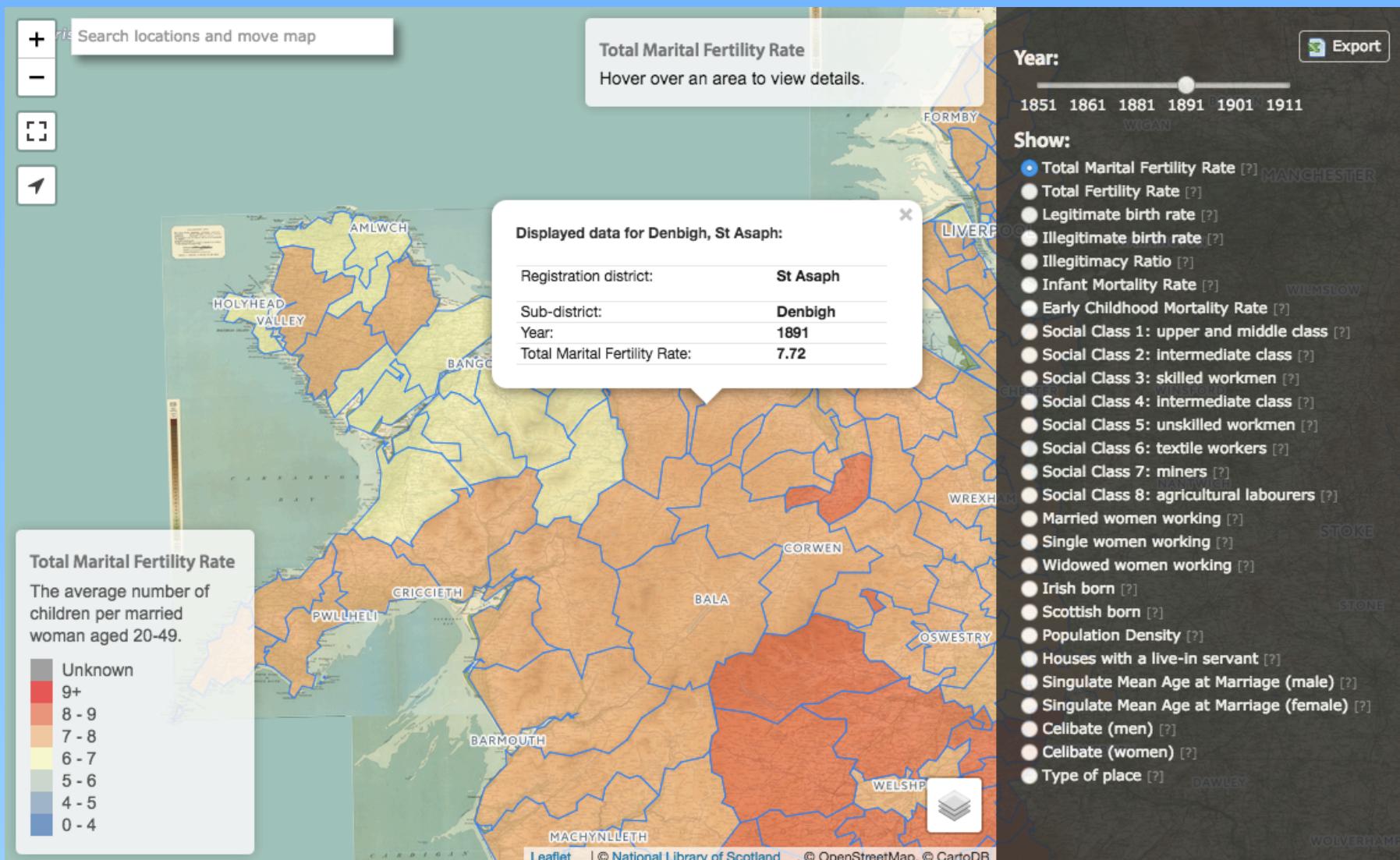
- API which adds a map to your site
- Clickable markers, lines, polygons
- Interactive, e.g. draw on
- Controls (geocoder, zoom, geolocate)



CycleStreets journey planner



CycleStreets Bikedata



Mapping frameworks

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Leaflet.js map framework



Mapping frameworks

Google Maps

- Tied in to Google's services
- Built-in proprietary services
- Closed-source
- Less flexibility

OpenLayers 3

- Open source
- More complex, but better than OL2
- Vector and rotation support

Leaflet.js

- Open source
- Complete flexibility and lots of plugins
- Vector support almost there now
- API is well-designed
- Huge plugin support
- Lightweight

Mapbox.js

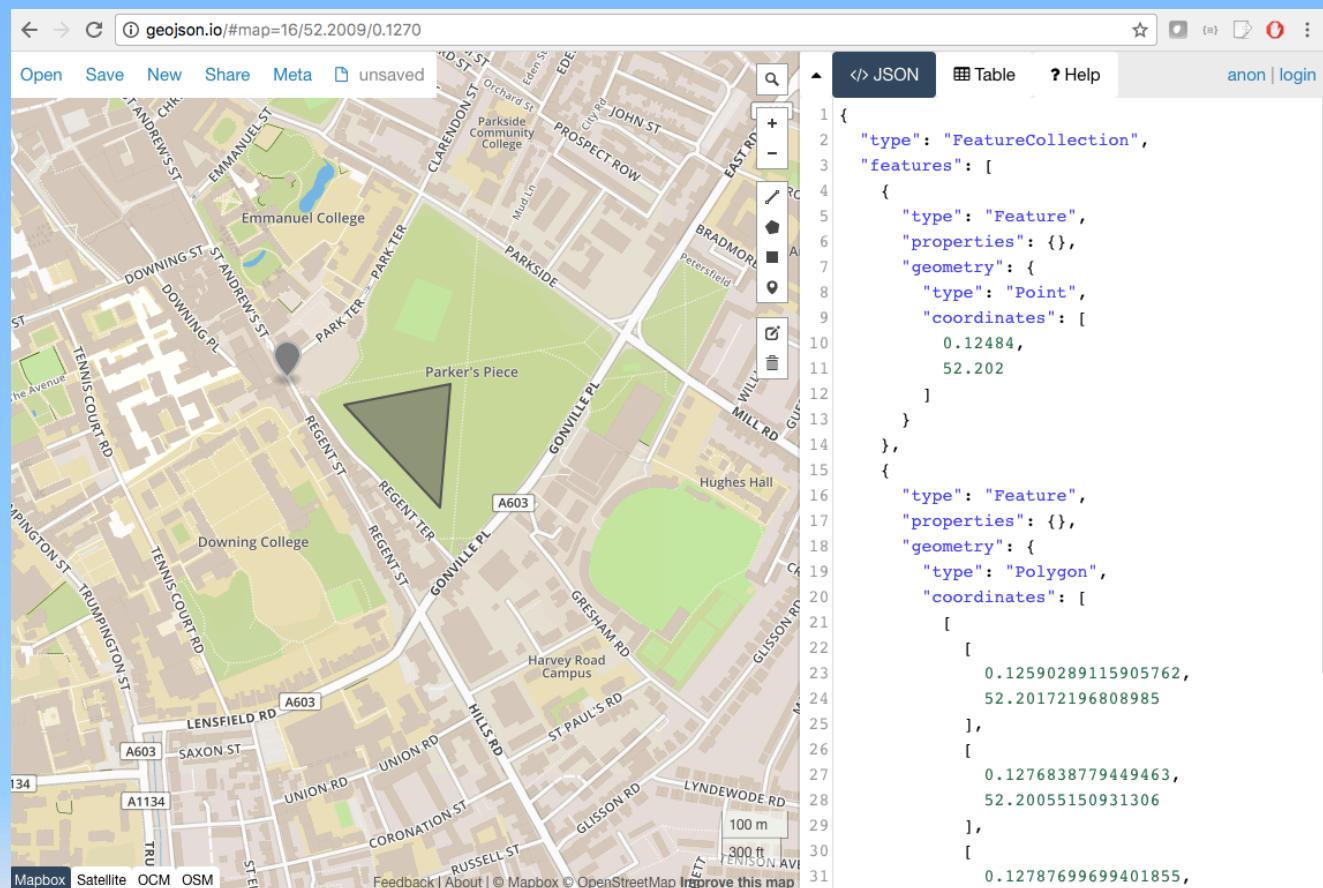
- Extends Leaflet.js
- Adds Mapbox proprietary services

MapboxGL

- Strong vector support
- Limited plugin support

Geojson.io

- Useful site for creating GeoJSON data quickly



OpenStreetMap



OpenStreetMap



Name:	Unknown access
OSM Way:	OSM 40962291 [edit]
Routing:	30%, 5 km/h, 60s, yes, yes
Surface:	Service road
Flow:	both
bearings:	↗
Length (m):	40
CycleStreets ID:	40962291 [edit]
tags:	access=private highway=service
highway:	service
access:	private
foot:	private
bicycle:	private
oneway:	no
routeld:	0
note:	start

CycleStreets data interrogation

Overpass Turbo

- Simple-ish way to extract from OSM

- Not for volume

The screenshot shows the Overpass Turbo web application. On the left, a code editor displays an Overpass query:

```
/*
This is an example Overpass query.
Try it out by pressing the Run button above!
You can find more examples with the Load tool.
*/
node
[amenity=bicycle_parking]
({{bbox}});
out;
```

On the right, a map of Cambridge, UK, is displayed with numerous blue circles overlaid, representing bicycle parking locations. A callout box highlights a specific node:

Node 1494177190

Tags:

- access=private
- amenity=bicycle_parking
- bicycle_parking=stands
- capacity=80
- covered=yes
- operator=Hughes Hall (University of Cambridge)

Coordinates:

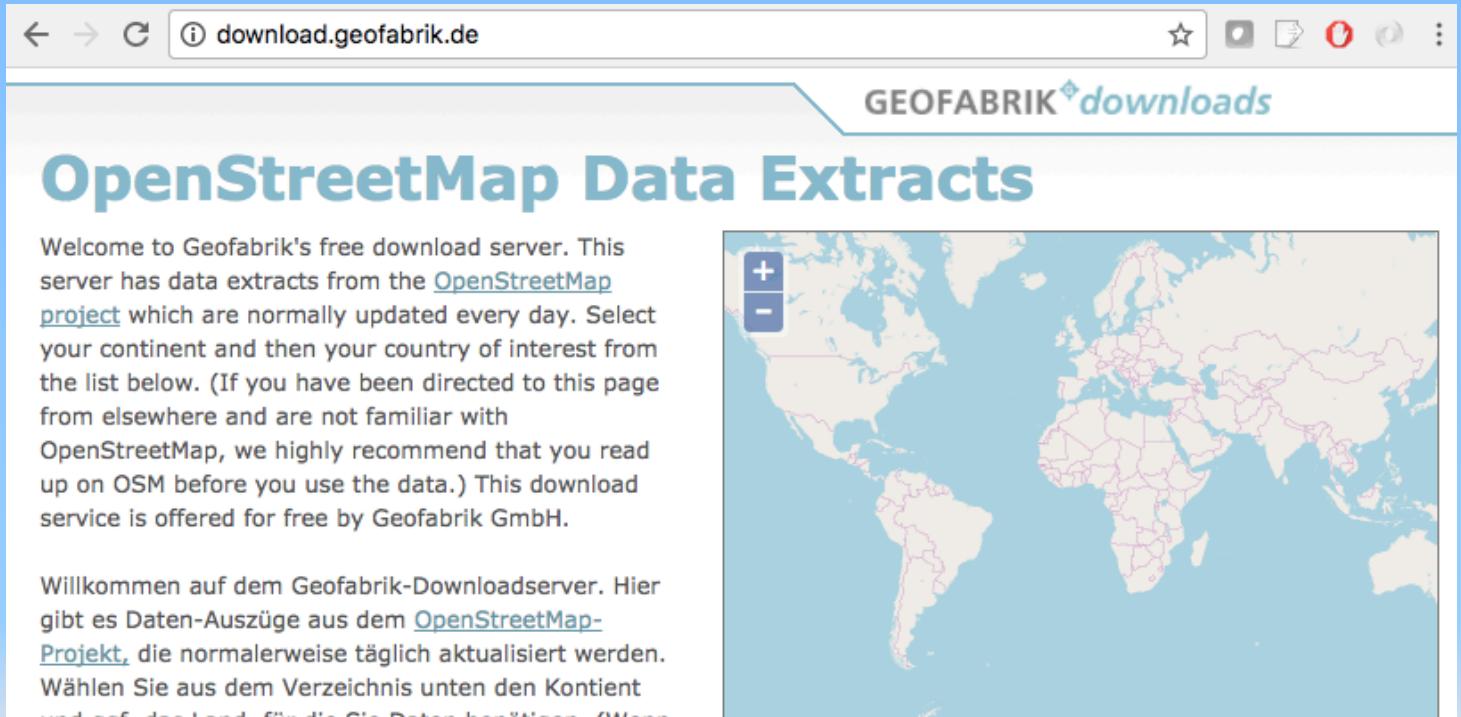
52.2007998 / 0.1314201 (lat/lon)

At the bottom of the map, status information is shown:

Loaded – nodes: 248, ways: 0, relations: 0
Displayed – pois: 248, lines: 0, polygons: 0

OSM data downloads

- Geofabrik downloads – free
- <http://download.geofabrik.de/>
- Shapefiles (GIS format)



The screenshot shows a web browser window for the URL download.geofabrik.de. The page title is "GEOFABRIK ^{downloads}". The main heading is "OpenStreetMap Data Extracts". Below it, there is a welcome message in English and German. To the right is a world map with country boundaries highlighted in pink, indicating where data extracts are available. A zoom control (+/-) is visible in the top-left corner of the map area.

Welcome to Geofabrik's free download server. This server has data extracts from the [OpenStreetMap project](#) which are normally updated every day. Select your continent and then your country of interest from the list below. (If you have been directed to this page from elsewhere and are not familiar with OpenStreetMap, we highly recommend that you read up on OSM before you use the data.) This download service is offered for free by Geofabrik GmbH.

Willkommen auf dem Geofabrik-Downloadserver. Hier gibt es Daten-Auszüge aus dem [OpenStreetMap-Projekt](#), die normalerweise täglich aktualisiert werden. Wählen Sie aus dem Verzeichnis unten den Kontinent und das Land, um die OSM-Daten herunterzuladen.

GDAL / ogr2ogr

- Command-line GIS
- Convert GIS shapefile to GeoJSON
- Ubuntu: sudo apt-get install gdal-bin
Mac: brew install gdal
- ```
ogr2ogr -f GeoJSON -t_srs EPSG:4326
output.geojson output.shp
```
- ```
ogr2ogr -f GeoJSON -lco
COORDINATE_PRECISION=4 -t_srs EPSG:4326 -
limit 1000 roads.geojson gis.osm_roads_free_1.shp
```

Useful links

- Leaflet plugins:
<http://leafletjs.com/plugins.html>
- Switch2OSM:
<https://switch2osm.org/>

CycleStreets API

- Cycling-related data ☺
- cyclestreets.net/api

CycleStreets API (v2)

Details for:

[API overview](#)

[Obtain API key](#)

[Usage policy](#)

[Uptime policy](#)

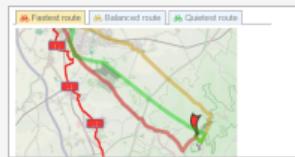
The CycleStreets API (v2) is a modern JSON interface to the routing engine and other CycleStreets components. Our API is used in a range of mobile apps and websites and we are keen to encourage wide usage.



[Apply for an API key](#) for use in your mobile/website application. The API is also available under a Commercial SLA.

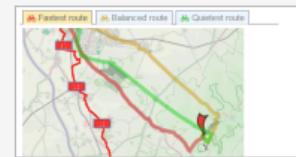
The examples assume an API key is specified – see how to specify an API key.

Journey planner



Cycle routing - plan new journey

Plans fastest / quietest / balanced cycle journeys in the UK (and some other areas), knows Sustrans routes, avoids hills, and supports waypoints.



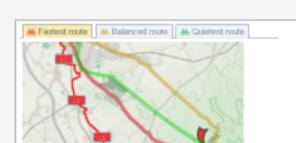
Cycle routing - retrieve

Retrieve an already-planned route.



Cycle routing - plan leisure (circular) route

The leisure routing API will suggest circular leisure routes



Journeys of user

This API provides a listing of the journeys of a specified user, having regard to any privacy settings.



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github.com/cyclestreets

github.com/mvl22

